



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,023	10/08/2004	Lars I. E. Oddsson	BU-082XX	8760
207 7590 07/13/2007 WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER SMITH, FANGEMONIQUE A	
			ART UNIT 3736	PAPER NUMBER
			MAIL DATE 07/13/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

88

<b>Office Action Summary</b>	<b>Application No.</b> 10/511,023	<b>Applicant(s)</b> ODDSSON ET AL.	
	<b>Examiner</b> Fangemonique Smith	<b>Art Unit</b> 3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 170 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is responsive to the Request for Continued Examination filed April 18, 2007. The Examiner acknowledges the amendment to claims 1-4, 14, 17, 36-39, 46, 58 and 66-70. Claims 1-70 are pending in the application.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 14-19, 21-37, 39-41, 46, 47, 49-66 and 68-70 are rejected under 35 U.S.C. 102(b) as being unpatentable over Allum (U.S. Patent Number 6,063,046) in view of Waters (U.S. Patent Number 5,979,067).

In regard to claims 1-4, Allum discloses a method and apparatus for the diagnosis and rehabilitation of balance disorders. The Allum device (20) comprises a plurality of sensors located in the support surface of the device for detecting balance information. The sensors are configured for wearing by placement under at least one foot of the user (col. 4, lines 55-67; col. 5, lines 1-30). The sensors transduce a detected magnitude of forces applied to the sensors and transmit at least one balance information signal to a signal processing subsystem (24). The Allum device further converts the balance information into at least one stimulation control signal. A feedback mechanism acts as a stimulator (38), which is responsive to said at least one stimulation control signal (col. 10, lines 23-42). The stimulator is attachable to a body surface

Art Unit: 3736

part of the user. The sensors disclosed by Allum are sensitive to forces oriented perpendicular and parallel to said plurality of sensors. The signal processing subsystem of the Allum device is further operable to convert the collected balance information signals received from the plurality of sensors into an estimate of a magnitude of force applied to a sole of at least one foot of the user. The signal processing system also determines a magnitude of the resultant reaction force applied to a sole of at least one foot of the user. The system incorporates the stimulator signaling means of the device providing a visual, audio, tactile and electro-vestibular feedback to the user upon placing the stimulator signaling means proximate with at least one sensory neuron of said user (col. 10, lines 23-42). Allum discloses the device having at least one stimulator securable to a leg of the user (col. 10, lines 23-67; col. 11-12; col. 13, lines 1-32). Stimulators of the Allum device are also capable of being secured on the head of the user or implantable within the body of the user (col. 26, lines 54-67; col. 27, lines 1-35). The stimulators of the Allum system are responsive to received stimulation control signals and the stimulus amplitudes, frequencies, and locations are indicative of at least one parameter describing forces applied to a sole of said at least one foot (col. 3, lines 5-67; col. 4; col. 5, lines 1-30).

In regard to claims 39-41, 46, 47, 49-66 and 68-70, Allum discloses at least one sensor for transducing an angle between at least one foot and an ipsilateral lower leg of a user. The balance information gathered by the device is transmitted to a signal processing system for converting the balance information into at least one stimulation control signal. A feedback mechanism acts as a stimulator (38), which is responsive to said at least one stimulation control signal (col. 10, lines 23-42). The stimulator is attachable to a body surface part of the user. The sensors disclosed by Allum are operable to determine angles between the foot of the user and the ipsilateral lower leg

Art Unit: 3736

of the user projected on a coronal or sagittal plane. The signal processing system of the Allum device determines a magnitude of an angle between at least one foot and the ipsilateral leg of the user. The system incorporates the stimulator signaling means of the device providing a visual, audio, tactile and electro-vestibular feedback to the user upon placing the stimulator signaling means proximate with at least one sensory neuron of said user (col. 10, lines 23-42). Allum discloses the device having at least one stimulator removably affixed to a leg of the user (col. 10, lines 23-67; col. 11-12; col. 13, lines 1-32). Stimulators of the Allum device are also capable of being secured on the head, arm or trunk of the user, or implantable within the body of the user (col. 26, lines 54-67; col. 27, lines 1-35). The stimulation control signals of the Allum device further encode time derivatives of the magnitude of pressure and of the radial position and angular position of the center of pressure under the foot of the user (col. 5, lines 2-67; col. 15, lines 4-67; col. 16; col. 17, lines 1-40).

In regard to claims 1-4, 14-19, 21-37, 39-41, 46, 47, 49-66 and 68-70, Allum discloses the features of the Applicant's invention as described above. Although Allum teaches movement of the platform, Allum does not specifically disclose the ability to analyze and collect balance information during gait. Waters disclose a device and related method for measuring foot posture. The Waters device includes a split surface platform for contact with each foot of a patient and allows either foot to be manipulated individually. Waters teaches manipulating either foot through pronation and supination positions to simulate gait, while collecting information regarding the foot posture and its effect during the simulated walking motions. It would have been obvious to one having ordinary skill in the art at the time the Applicants' invention was made to modify an apparatus for the diagnosis and rehabilitation of balance disorders, similar to

that disclosed by Allum, to include a split platform surface which moves a foot through each position achieved during gait, similar to that disclosed by Waters, to provide a way to determine balance information during simulated gait techniques.

4. Claims 5-10, 20, 42-45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allum (U.S. Patent Number 6,174,294) in view of Waters (U.S. Patent Number 5,979,067) and further in view of Crabb et al. (U.S. Patent Number 6,174,294).

In regard to claims 5-10, 20, 42-45 and 48, the combined references of Allum and Waters disclose the features of the Applicant's invention as described above. The combined references do not disclose the sensors being insertable into another device other than the platform. Crabb et al. disclose a limb load monitor, which provides feedback to a patient or user when a preselected force load is met or exceeded on the foot of the user. The plurality of sensors of the Crabb et al. device can be attached to a shoe or a stocking of a user. It would have been obvious to one having ordinary skill in the art at the time the Applicants' invention was made to modify a method and apparatus for the diagnosis and rehabilitation of balance disorders, similar to that disclosed by the combined references of Allum and Waters, to include at least one sensor which can be attached to a shoe or a stocking of a user, similar to that disclosed by Crabb et al., to provide a mechanism which potentially improves the connection between the sensors and the user while increasing the utility of the device.

5. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allum (U.S. Patent Number 6,174,294) in view of Waters (U.S. Patent Number 5,979,067) and further in view of Andrews (U.S. Patent Application Publication Number 2002/0055779).

Art Unit: 3736

In regard to claims 11-13, the combined references of Allum and Waters disclose the features of the Applicant's invention as described above. Although the combined references disclose implantable sensors, the combination does not disclose the sensors within the platform, which comprise the plurality of sensor as implantable within the body of the user. Andrews discloses a neural prosthesis with a sensor having output representative of human body activity. The device disclosed by Andrews performs a body movement analysis according to the data provided by the implantable sensor. It would have been obvious to one having ordinary skill in the art at the time the Applicants' invention was made to modify a, similar to that disclosed by the combined references of Allum and Waters, to make the plurality of sensors implantable, similar to that disclosed by Andrews, to provide a discrete analysis system while maintaining the functionality of the device.

6. Claim 38 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allum (U.S. Patent Number 6,063,046) in view of Waters (U.S. Patent Number 5,979,067) and further in view of Confer (U.S. Patent Number 4,745,930).

In regard to claims 38 and 67, the combined references of Allum and Waters disclose the features of the Applicant's invention as described above. The combination does not disclose the use of a sensor to determine angle information between the upper and lower leg of the user, upon analysis of the data collected. Confer discloses a force sensing insole adapted to be used in association with an electro-goniometer for analyzing gait of a patient. The information gathered by the Confer device includes information regarding the knee angle during gait analysis. It would have been obvious to one having ordinary skill in the art at the time the Applicants' invention was made to modify an apparatus for diagnosis of balance disorders, similar to that

Art Unit: 3736

disclosed by the combined references of Allum and Waters, to include an electro-goniometer system, similar to that disclosed by Confer, to provide additional motion information for determining forces exerted at the knee of the user.

### ***Response to Arguments***

10. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fangemonique Smith whose telephone number is 571-272-8160. The examiner can normally be reached on Mon - Fri 8am - 4:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 3736

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FS

  
MARK WINDENBURG  
SENIOR PATENT EXAMINER  
TECHNOLOGY CENTER 3700